STATUS OF CLAIMS

Claims 1-6 are pending.

Claims 1-2 stand rejected.

Claim 3 stands objected to.

The status of claims 4-6 is not mentioned in the Office Action Summary, and there is no explicit rejection of these claims recited in the Detailed Action . However, the references to claims 4-6 in the Detailed Action indicate that the Examiner intended to reject claims 4-6 on the same art as cited against claims 1-2, and this Response has been prepared accordingly.

No claims have been amended.

REMARKS

Claims 1 – 2 stand rejected under 35 U.S.C. 102(b) as being anticipated by any one of U.S. Patent No. 5,021,793 (Stangel), U.S. Patent No. 4,937,584 (Gabriel), U.S. Patent No. 6,166,689 (Dickey, Jr.), or U.S. Patent No. 5,515,060 (Hussain). The rejection is respectfully traversed, on the grounds that none of the references teaches all of the limitations of either claim 1 or claim 2. As noted above, the same rejection is understood to have been applied to claims 4-6, and is traversed on the same grounds. Moreover, there is no suggestion in the prior art to modify the references in any manner to arrive at the invention as claimed in any of claims 1-2 and 4-6.

The invention of claim 1 is a method of transmitting a radar signal in which phase perturbations are used to provide at least one selected frequency range of a

relative null in the tail of the transmitted signal. The method employs phase perturbations to provide a constant-amplitude pulse with a reduced amplitude in a selected frequency range. For example, Fig. 2a shows the output of the unperturbed signal, and Fig. 2b shows the output of the perturbed signal.

None of the cited references teaches applying phase perturbations to a constant-amplitude pulse so as to produce a phase-perturbed constant-amplitude pulse centered at a frequency within a nominal frequency bandwidth of the radar with reduced amplitude of that portion of said actual bandwidth of said constant-amplitude pulse which lies within said other operating band. While phase perturbations are taught in the prior art, none of the cited art teaches applying phase perturbations *so as to produce* a pulse *with reduced amplitude of that portion of said actual bandwidth of said constant-amplitude pulse which lies within said other operating band.* Indeed, the prior art does not teach phase perturbation so as to produce a signal having a null at a selected frequency range, and transmitting the signal.

The invention of claim 4 is similarly directed to a method of transmitting a radar pulse, including the steps of: generating a constant-amplitude pulse centered at a center frequency and having an actual bandwidth which includes a selected frequency range; applying phase perturbations to the constant-amplitude pulse so as to produce a phase-perturbed constant-amplitude pulse centered at the center frequency with reduced amplitude in the selected frequency range and relatively higher amplitudes above and below the selected frequency range; and transmitting the phase-perturbed constant-amplitude pulse toward a radar target. Fig. 2a shows an output of an exemplary constant amplitude pulse prior to the step of applying phase perturbations,

and Fig. 2b shows an exemplary phase-perturbed constant amplitude pulse. Similarly, the prior art fails to teach or suggest applying phase perturbations to a constant-amplitude pulse so as to produce a phase-perturbed constant amplitude pulse centered at a center frequency, with reduced amplitude in a selected frequency range and relatively higher amplitudes above and below the selected frequency range.

Stangel relates to a system in which data from an auxiliary array is correlated with a main array response to place nulls in the main antenna pattern sidelobes corresponding to direction of interfering sources (col. 2, lines 30-34). Stangel does not mention or relate to reducing the amplitude of a selected frequency range of a transmitted radar signal. Rather, Stangel has to do with providing nulls in the direction of sources of interference.

Gabriel, similar to Stangel, is a system for providing nulls in the direction of interference sources (Abstract). While phase only or phase and amplitude perturbations may be used (Abstract), the nulls are in various physical directions, and thus are unrelated to the method of either claim 1 or claim 4.

Dickey relates to signal detection methods in systems utilizing arrayed receptors, and to processors for use in such systems (col. 1, lines 5-12 and 51-57). Dickey thus fails to disclose a method for transmitting pulses. Dickey discloses a null at the angle of a source of interference (col. 2, line 65 to col. 3, line 1). A disclosure of nulls in a particular direction is not relevant to the methods claimed in claim 1 or claim 4, where the pulse amplitude is reduced not in a direction, but in a certain frequency range.

Hussain teaches an active array antenna system having a perturbation phase generator for adding a perturbation phase shift to form a relatively wide null in a sidelobe structure, which may be aimed at a source of ground clutter or a jammer (Abstract). This disclosure of nulls in a particular direction is not relevant to the methods claimed in claim 1 or claim 4, where the pulse amplitude is reduced not in a direction, but in a certain frequency range.

Accordingly, independent claims 1 and 4 are allowable over the prior art of record.

Claim 2 depends from claim 1, and is allowable at least for the reasons that claim 1 is allowable.

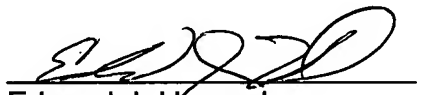
Claims 5 and 6 depend from claim 4, and are allowable at least for the reasons that claim 4 is allowable.

CONCLUSION

Applicant believes he has addressed all outstanding grounds raised by the Examiner and respectfully submits the present case is in condition for allowance, early notification of which is earnestly solicited.

Should there be any questions or outstanding matters, the Examiner is cordially invited and requested to contact Applicant's undersigned attorney at his number listed below.

Respectfully submitted,



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